

WHAT IS CLAIMED IS:

1. A system for providing shape, surface features, or both, to a moldable material, comprising:
  - at least two first opposed flat endless belts spaced apart a first distance, each having an inner surface and an outer surface;
  - at least two second opposed flat endless belts disposed substantially orthogonal to the first two opposed endless belts and spaced apart a second distance,
  - a mold cavity defined at least in part by the inner surfaces of the at least two opposed flat endless belts; and
  - a drive mechanism for imparting motion to at least two of the opposed flat endless belts.
2. The system of claim 1, further comprising .at least two endless opposing profile mold belts, each adapted to fit within the mold belt cavity, and each having
  - an inner surface adapted to shape, or mold surface features, or both, into a moldable material, and
  - an outer surface in contact with the inner surfaces of the flat endless belts.
3. The system of claim 1, wherein the outer surface of one or both of the flat endless belts is supported by a rigid supporting surface.
4. The system of claim 3, wherein the rigid supporting surface comprises a slider bed or platen.
5. The system of claim 3, wherein the outer surface comprises a coating of a friction reducing substance.

6. The system of claim 5, wherein the friction reducing substance comprises a fluoropolymer, ultra-high molecular weight polyethylene, or other low friction polymer.
7. The system of claim 3, further comprising an air-film lubrication system adapted to reduce friction between the flat endless belt and the rigid supporting surface.
8. The system of claim 7, wherein the rigid supporting surface comprises a plurality of holes therein, in fluid communication with a plenum chamber located near the slider bed or platen, and wherein the holes and plenum chamber are adapted to provide pressurized air film lubrication between the flat endless belt and the rigid supporting surface.
9. The system of claim 1, wherein the first opposed endless belts or the second opposed endless belts, or both, are adjustable such that the first distance, or the second distance, or both, can be varied.
10. The system of claim 1, wherein at least one of the profile mold belts comprise an elastomeric face layer adapted to contact the moldable material, and a reinforced backing layer adapted to contact the inner surface of the flat endless belt.
11. The system of claim 1, further comprising a plurality of a profile mold belt tensioners, adapted to maintain the profile mold belts in tension.
12. The system of claim 11, wherein the profile mold belt tensioner comprises one or more pulleys disposed such that the profile mold belt encloses at least a portion of the drive mechanism.

13. The system of claim 2, wherein the flat endless belts and the profile mold belts are oriented substantially horizontally, and wherein the additional opposed flat endless belts disposed substantially orthogonal to the first two opposed endless belts are disposed substantially vertically.

14. A method of continuously forming a moldable material to have a desired shape or surface feature or both, comprising:

introducing the moldable material into an end of a mold cavity formed at least in part by the inner surfaces of two substantially orthogonal sets of opposed flat belts;

exerting pressure on the moldable material through the opposed flat belts;

transferring the moldable material along the mold cavity by longitudinal movement of the belts;

after sufficient time for the material to cure or harden into the molded configuration and thereby form molded material, removing the molded material from the mold cavity.

15. The method of claim 14, wherein the mold cavity is at least partly defined by the inner surfaces of two opposed profiled mold belts disposed inside the opposed flat belts, and having outer surfaces in contact with the inner surfaces of two of the opposed flat belts.

16. The method of claim 14, wherein the moldable material comprises a filled thermoset plastic.

17. The method of claim 14, wherein the moldable material comprises a foamed or foaming material.

18. The method of claim 15, wherein the profile mold belts form the moldable material into a shape having a cross-section at least approximately corresponding to that of the mold cavity.

19. The method of claim 15, wherein the profile mold belts impart a surface pattern to the moldable material.
20. The method of claim 14, wherein the molded material comprises a synthetic lumber, roofing tiles, molded trim profiles, or siding.
21. A forming apparatus for forming a moldable material, said apparatus comprising:
- a first belt;
  - a second belt opposed to said first belt, said first and second belts spaced apart a first distance, each of said first and second belts comprising an inner surface and an outer surface;
  - a third belt;
  - a fourth belt opposed to said third belt, said third and fourth belts spaced apart a second distance and disposed substantially orthogonal to said first and second belts, each of said third and fourth belts comprising an inner surface and an outer surface;
  - a mold cavity defined by said inner surfaces of said first, second, third, and fourth belts; and
  - a belt drive mechanism operationally coupled to at least two of said first, second, third, and fourth belts.
22. A forming apparatus in accordance with Claim 21, further comprising first and second opposing contoured mold belts positioned at least partly in said mold cavity, each of said first and second mold belts comprising:
- an inner surface comprising at least one of a profile, surface features, and texture that is molded into a moldable material; and
  - an outer surface in contact with said inner surface of said first or second flat belt.

23. A forming apparatus in accordance with Claim 21 wherein said outer surface of said first and second belts are supported by first rigid supporting surfaces.
24. A forming apparatus in accordance with Claim 23 wherein each said first supporting surface comprises a friction reducing substance.
25. A forming apparatus in accordance with Claim 24 wherein said friction reducing substance comprises at least one of a fluoropolymer, an ultra-high molecular weight polyethylene, and other low friction polymers.
26. A forming apparatus in accordance with Claim 23 wherein each said first rigid support surface comprises a plurality of air passage openings in fluid communication with a pressurized air source to provide a pressurized air film between said outer surface of said first and second belts and said second rigid support surfaces.
27. A forming apparatus in accordance with Claim 21 wherein at least one of said first, second, third, and fourth belts is adjustable so that at least one of said first distance and said second distance is variable.
28. A forming apparatus in accordance with Claim 22 wherein each said mold belt comprises an elastomeric face layer for contacting the moldable material, and a reinforced backing layer for contacting said inner surface of said first or said second belt.
29. A forming apparatus in accordance with Claim 21 wherein said outer surface of said third and fourth belts is supported by second rigid supporting surfaces.
30. A forming apparatus in accordance with Claim 29 wherein each said second supporting surface comprises a friction reducing substance comprising at least one of

a fluoropolymer, an ultra-high molecular weight polyethylene, and other low friction polymers.

31. A forming apparatus in accordance with Claim 29 wherein each said second rigid support surface comprises a plurality of air passage openings in fluid communication with a pressurized air film between said outer surface of said third and fourth belts and said second rigid support surfaces.

32. A continuous forming apparatus for forming a moldable material, said apparatus comprising:  
a first pair of opposed closed loop conveyors spaced apart a first distance;  
a second pair of opposed closed loop conveyors spaced apart a second distance and disposed substantially orthogonal to said first pair of conveyors; and  
a mold cavity defined by an area between said first and second pairs of conveyors.

33. A continuous forming apparatus in accordance with Claim 32 further comprising a pair of opposed mold members positioned at least partially in said mold cavity, each said mold member comprising a mold profile.

34. A continuous forming apparatus in accordance with Claim 32 wherein said first pair conveyors are supported by second rigid supporting surfaces.

35. A continuous forming apparatus in accordance with Claim 34 wherein at least one of said first rigid supporting surfaces and said second rigid supporting surfaces comprises a friction reducing substance.

36. A continuous forming apparatus in accordance with Claim 35 wherein said friction reducing substance comprises at least one of a fluoropolymer, an ultra-high molecular weight polyethylene, and other low friction polymers.

37. A continuous forming apparatus in accordance with Claim 34 wherein at least one of said first rigid supporting surfaces and said second supporting surfaces comprises a plurality of air passage openings in fluid communication with a pressurized air source to provide a pressurized air film between said first and said second pairs of conveyors and said first and said second rigid support surfaces.

38. A continuous forming apparatus in accordance with Claim 33 wherein at least one of said first pair of conveyors and said second pair of conveyors are adjusted so that at least one of said first distance and said second distance is variable.

39. A continuous forming apparatus in accordance with Claim 32 wherein each said mold member comprises an elastomeric face layer for contacting the moldable material.